

1           1. An exciter assembly for supplying power to a superconducting load disposed  
2 within a cryogenic region of a rotating machine, the exciter assembly comprising:  
3           a transformer having a primary winding and a secondary winding, one of the primary  
4 and secondary windings being positioned in a rotational reference frame relative to the other  
5 of the primary and secondary windings; and  
6           a rotatable enclosure including a wall having an intermediate core formed of a high  
7 permeability material, the intermediate core positioned between the primary winding of the  
8 transformer and the secondary winding of the transformer.

1  
2           2. The exciter assembly of claim 1 wherein the primary winding is disposed  
3 external to the rotatable enclosure and the secondary winding is disposed within the rotatable  
4 enclosure.

1  
2           3. The exciter assembly of claim 1 wherein the primary winding is in the form of  
3 a stationary disk and the secondary winding is in the form of a rotatable disk axially spaced  
4 from the stationary disk to form a gap therebetween, the wall of the rotatable enclosure  
4 disposed within the gap.

1  
2           4. The exciter assembly of claim 3 wherein at least one of the stationary disk and  
2 the rotatable disk is formed of radial laminations.

1  
2           5. The exciter assembly of claim 4 wherein the intermediate core is formed of  
2 radial laminations.

1  
2           6. The exciter assembly of claim 3 wherein the stationary disk and the rotatable  
3 disk are each formed of core segments, each core segment on each of the stationary disk and  
4 rotational disk disposed in a radial direction and angularly spaced from another core segment  
4 of the stationary disk and rotational disk, respectively.

1           7. The exciter assembly of claim 6 wherein the intermediate core is formed of  
2 core segments, each core segment on the intermediate core disposed in a radial direction and  
3 angularly spaced from another core segment of the intermediate core.

1

1           8. A rotatable enclosure surrounding a housing having an internal volume for  
2 supporting cryogenically-cooled components, the rotatable enclosure comprising a wall  
3 including a flux window formed of a high permeability material, the flux window positioned  
4 between a primary of a transformer disposed external to the rotatable enclosure and a  
5 secondary of the transformer disposed within the rotatable enclosure.